

concealed beneath the preceding segment. The telescoping of these two segments is facilitated by the depression, and is of obvious importance for the bending and unbending of the pleon.

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Vorläufige Mittheilungen über einige Amphipoden. Beiträge zur Anatomie der Amphipoden. Zoologischer Anzeiger. II. Jahrgang. 1879. pp. 447-450, 465-469, 487-491, 511-515, 536-540, 564-569.

Also in a Separat-Abdruck, 24 pp.

These valuable contributions to the anatomy of the Amphipoda are based chiefly on *Goplana polonica*, *Pallasea cancellus*, *Callisoma branickii*, and two varieties of *Gammarus pulex*. The matrix or hypodermis is shown to be completely distinct from the adipose tissue, the former, as examined in *Pallasea cancellus*, presenting a typical stratified cylindrical epithelium, having its small granular cells provided each with a nucleus and nucleolus, the latter consisting of relatively large, rounded and somewhat angular, very pale cells connected together without intercellular substance. This latter forms a sheath for the alimentary canal, and fills the space between it and the heart, for which it forms the serous covering, intercellular substance here making its appearance. By flat or string-like offshoots it connects the various internal organs with one another and with the external covering of the body. On various parts of the inner surface of the matrix it forms a layer of connective tissue to which the offshoots above-mentioned are fastened. The fat-drops, which are met with most constantly between the alimentary canal and the heart, are rare or almost entirely wanting in fasting Amphipods, but abundant in well-fed specimens.

The muscular system in *Goplana polonica* is thus described. The flexors of the back present two separate systems. The one consists of oblique muscles running from above and behind obliquely forwards and downwards. Each muscle begins halfway up the segment and inserts its lower end on the ventral surface of the preceding segment. These are wanting in the four first segments of the body, but present from the fifth to the tenth, the three following segments, which in *Goplana polonica* are coalesced, possessing a common very strong oblique flexor. The other set of flexors is thus constituted. On either side in the lower part of the segments run, from one segment to the next, and interlaced, pairs of muscles parallel to the ventral surface of the body. These muscles are united at the places of insertion, so that they form elongated links. These Wrześniowski calls longitudinal flexors of the back. The regular arrangement of these prevails from the fourth to the ninth segment of the body. Only the upper muscle enters the tenth segment. The three coalesced segments have a single very long longitudinal flexor. In the front part of the body these muscles run without interruption from the hinder rim of the head to unite at a common place of attachment in the fourth segment of the body.

The extensors, which are considerably stronger than the flexors, form strong tracts on either side, extended between the front rims of neighbouring segments. The front divisions of the extensors and flexors raise and lower the head.

The abdominal feet are moved by a complicated system of muscles. The first basal joint of each foot possesses an extensor and a flexor, which draw the whole foot forwards and backwards. The two terminal branches of the foot have each a very thin and broad extensor and flexor, running from the upper rim of the basal joint to the commencement of the corresponding branch. Each branch has its own abductors and adductors, the outer